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Original Article

The burden of coexistent allergic rhinitis and allergic conjunctivitis on health-related quality of life

Shuaib Kayode Aremu, AbdulAkeem Adebayo Aluko[1], Tayo Ibrahim[2]

Departments of ENT and [2]Ophthalmology, Federal Teaching Hospital,Ido-Ekiti/Afe Babalola University Ado-Ekiti, Ekiti State, [1]Department of ENT, Bayero University/ Aminu Kano Teaching hospital, Kano, Nigeria

Abstract

Background: Allergic rhinitis (AR) is a symptom complex of consisting of nasal congestion, rhinorrhoea, sneezing and nasal itching arising from an IgE-mediated allergic reaction and inflammation of the mucosal lining of the nose and contiguous mucosal membranes usually due to airborne allergen. AR may occur in isolation or may coexist with allergic conjunctivitis (AC).

Aim: The aim of this study is to assess and evaluate the importance of health-related quality of life (HR-QoL) in patients suffering from concomitant AC with AR with different types of quality-of-life instruments.

Methods: A sum of 220 patients who attended the outpatient department of ENT clinic were involved in this study. All patients undertook an ophthalmologic examination for coexistent AC. The rhino conjunctivitis quality of life questionnaire (RQLQ) was used to evaluate the quality of life in all patients.

Results: The mean age of the 220 patients (116 females and 104 males) involved in the study was 26.8 years. The male-to-female ratio was 1:1.1. Of the 220 patients, 55% studied up to secondary school graduation and 18% dwelt in the rural area. In the assessment of the statistics obtained from the AR and conjunctivitis symptom scoring, the mean total complaint score was found to be 13.2 ± 4.0.

Conclusion: AR can vary based on a region's flora, weather and socioeconomic status. AR could lead to severe impairment in HR-QoL.

Keywords: Allergic conjunctivitis, allergic rhinitis, health-related quality of life

Address for correspondence: Dr. Shuaib Kayode Aremu, Department of ENT, Federal Teaching Hospital, Ido-Ekiti, Ekiti, Nigeria/Afe Babalola University, Ado-Ekiti, Ekiti, Nigeria.
E-mail: shuaib.aremu@gmail.com
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INTRODUCTION

As a consequence of the amplified need for better connection of health-care costs with quality of care given, outcome parameters linked to patients' overall health status are gaining a significance equal to or greater than studies based on symptoms or biologic and physiologic variables.[1-3] In particular, health-related quality-of-life (HR-QoL) results have become crucial factors in the growth and refinement of practice-guiding principle, the assessment of patterns of medical care and the analysis of therapeutic interventions. Allergic rhinitis (AR) is a symptom complex of consisting of nasal congestion, rhinorrhoea, sneezing and nasal itching arising from an IgE-mediated allergic reaction and inflammation of the mucosal lining of the nose and contiguous mucosal membranes usually due to airborne allergen. AR may occur in isolation or may coexist with allergic conjunctivitis (AC). The simultaneous existence is

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really worrisome in patients and may significantly affect the quality of life of such patients.

The frequent coexistence of AR and AC means that the presence and severity of AC should be assessed in every patient with AR. Furthermore, adequate management of both diseases is essential to achieve optimal therapeutic outcomes.

In this study, we aimed to assess and evaluate the importance of HR-QoL in patients suffering from concomitant AC with AR with different types of quality-of-life instruments.

METHODOLOGY

This is a prospective study carried out between March 2017 and February 2018, involving 220 patients who attended the Outpatient Department of the ENT Clinic of Federal Teaching Hospital Ido-Ekiti. Ethics were approved by the Ethical Committee of our institution. Written and informed consent was taken for all the patients. A structured questionnaire was used to obtained relevant information from the patients. All patients undertook ophthalmologic examination for coexistent AC. The data were analysed using the Statistical Package for the Social Sciences (SPSS) version 22.0 (IBM Corp., Armonk, New York,USA). $P < 0.05$ was considered statistically significant. Average, median, mode, standard deviation, minimum–maximum and ratio values were used for expressive analysis of the data. The distribution of variables was measured with the Kolmogorov–Smirnov test. Paired *t*-test was employed for studying quantitative values. Chi-square test was taken into consideration for analysing qualitative values. For the scrutiny of correlation, Pearson/Spearman correlation analysis coefficient was employed. Statistical values of patients were noted in terms of age, sex, smoking, educational qualification, an area of dwelling, type of illness and time period of complaints.

For assessing the HR-QoL in patients with AR, the rhinoconjunctivitis quality-of-life scale (RQLQ), which consisted of 28 questions under seven main headings (sleep, non-hay fever complaints, practical issues, nasal complaints, ophthalmic complaints, activities and emotionality), was used. All patients were asked to answer the questions between 0 – 'not disturbed' and 6 – 'too much disturbed'. Furthermore, three day-to-day activity limitations due to the illness were documented.

The diagnosis of AR was made through history, anterior rhinoscopy and endoscopic nasal inspection and with three and more positive (+++) reactions to at least one allergen in the skin prick test. Skin prick examination was executed on the interior surface of the forearm with the help of a test panel, comprising standard allergens (Stallergenes, Antony Cedex, France). Saline was taken as a negative control, and histamine was taken as a positive control.

An eye examination was sought for all the patients, and the occurrence of associated AC was noted. The diagnosis of AC was established for patients who had eye symptoms and who presented with signs of conjunctival congestion, oedema, eyelid oedema and/or papillary reaction on inspection. Furthermore, all patients went through AR and conjunctivitis complaint scoring, including seven parameters (four nasal and three eye parameters), which were excessive nasal secretion, nasal itch, nasal obstruction, excessive sneezing, burning or itchy eyes, eye redness and watery eyes. They were requested to score the items between 0 and 3 (0 – no complaint, 1 – mild [feeling a little], 2 – moderate [feeling during daytime] and 3 – severe [feeling as much as it affects daily life]).

Patients who were on antihistaminic, anti-inflammatory, topical or systemic steroid, immunosuppressive, antidepressant or antihypertensive medications within the previous 20 days were excluded from the research. Furthermore, patients with nasal pathologies, such as chronic sinusitis, nasal septum deviation, turbinate hypertrophy and nasal polyposis, except for AR, and with concurrent systemic ailments were also ruled out.

RESULTS

The mean age of the 220 patients(116 females and 104males) involved in the study was 26.8 years. The maletofemale ratio was 1:1.1. Of the 220 patients, 55% studied up to secondary school graduation and 18% dwelled in the rural area. The mean time for symptoms was found to be 4.8 years. The patients' age, gender, smoking history, education status, residence area and AR type are shown in Figure 1.

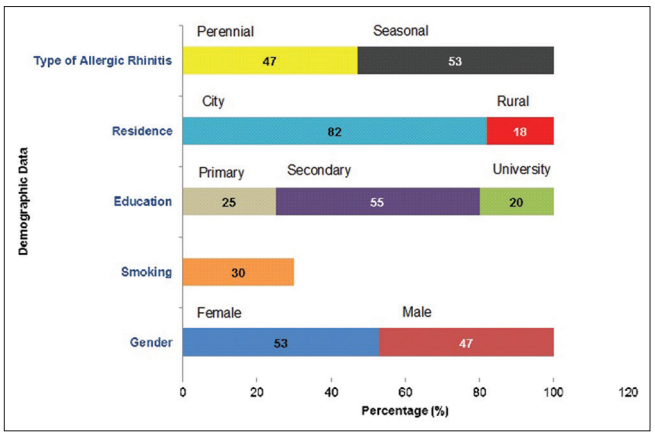

Figure 1: Sociodemographic data

In the assessment of the statistics obtained from the AR and conjunctivitis symptom scoring, the mean total complaint score was found to be 13.2 ± 4.0. When RQLQ scores were evaluated, it was detected that the scores under the title of practical concerns were greater [Table 1].

The RQLQ scoring system used in this study is shown in Table 2. In the assessment of the 220 patients' restricted activities, 15 activities that influenced the daily lives of the patients due to illness were identified from 295 responses. The frequently affected daily activities were talking in a community, sleeping, eating and school life. The activity for which patients complained more severely due to illness was found to be school life and studying [Table 3]. Nasal symptom score, ocular symptom score and total symptom score were higher in the group with coexistent AC than in the group without AC ($P < 0.05$). In the group with coexistent AC, RQLQ scores of sleep, nonhay fever complaints, nasal complaints, ophthalmic complaints and restricted activities were significantly higher compared to the group without AC [Figure 2; $P < 0.05$]. In terms of the relationship between symptom scores and RQLQ scores, a positive significant correlation was found between the scores of nasal symptom, ocular symptom and total symptom and the RQLQ scores of sleep, nonhay fever complaint, nasal complaint, ophthalmic complaint and restricted activities using Pearson/Spearman correlation ($P < 0.05$).

Table 1: Data obtained from allergic rhinitis and conjunctivitis symptom scoring and rhinoconjunctivitis quality-of-life scale

	Mean±SD
AR and conjunctivitis symptom scoring	
Nasal symptom score	9.1±1.2
Ocular symptom score	4.1±2.8
Total symptom score	13.2±4.0
RQLQ scoring	
Sleep	3.1±1.6
Non-hay fever complaints	3.4±0.9
Practical issues	4.2±0.8
Nasal complaints	3.8±0.8
Ophthalmic complaints	2.0±1.3
Restricted activities	3.9±0.8
Emotionality	3.1±0.5

SD: Standard deviation, RQLQ: Rhinoconjunctivitis quality-of-life scale, AR: Allergic rhinitis

Table 2: Quality-of-life parameters measured by the rhinoconjunctivitis quality-of-life scale questionnaire

Dimension	
Sleep	Activities
Lack of a good night's sleep	Talking in a community
Wake up during the night	Sleep
Difficulty getting to sleep	Eating
Non-hay fever symptoms	School life
Tiredness	Working life
Fatigue	Reading book
Worn out	House cleaning
Reduced productivity	Shopping
Poor concentration	Studying
Thirst	Driving
Headache	Childcare
Practical problems	Traveling
Need to blow nose repeatedly	Worship
Need to rub nose/eyes	Sports
Inconvenience of having to carry tissues or handkerchief	Washing up
Nasal symptoms	
Stuffy/blocked	
Sneezing	
Runny	
Itchy	
Eye symptoms	
Itchy	
Watery	
Swollen	
Sore	
Emotions	
Irritable	
Frustrated	
Impatient or restless	
Embarrassed by nose/eye symptoms	

DISCUSSION

Although not a life-threatening condition, AR has a prevalence of ≥10% of the entire populace all over the world with a noteworthy social influence and should not be left to its natural progression.[4] Its the natural history

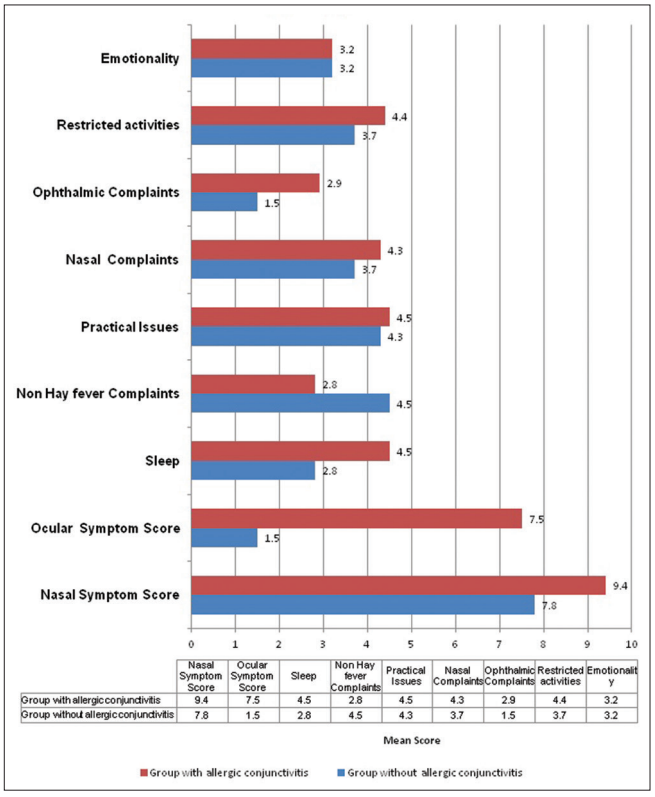

Figure 2: Comparison of groups with and without coexistent allergic conjunctivitis

Table 3: Distribution of restricted activities and symptom scores

Restricted activities	*n*	Mean symptom score
Talking in a community	117	4.3±1.2
Sleep	71	3.8±1.2
Eating	67	4.0±1.1
School life	65	4.8±0.9
Working life	46	4.3±1.3
Reading book	46	3.5±0.9
House cleaning	44	3.2±1.0
Shopping	8	3.6±1.1
Studying	9	4.8±0.9
Driving	39	3.5±1.3
Childcare	35	3.4±1.0
Traveling	11	2.6±0.5
Worship	12	3.5±0.8
Sports	7	4.1±0.6
Washing up	2	4.6±0.2

that begins with the convention between the atopic person and allergenic substances is distinct, during the early years of allergic illness, by typical indicators: pale nasal mucosa, oedema of middle and lower turbinates, increased watery secretion (rhinorrhoea), itching, sneezing and nasal congestion.[4] When an allergen that comes in the body through inhalation approaches mast cells, it leads to the release of many inflammatory mediators through IgE. These inflammatory mediators such as interleukin-1 and tumour necrosis factor-alpha increase vascular permeability and lead to watery nasal secretion and oedema in the nasal cavity, nasal congestion and increased mucous secretion. Moreover, allergen-sensitive nerve endings are stimulated resulting to and nasal itching and sneezing.[5]

The association amid AR and other allergic diseases, such as AC, has been testified.[6-8] In Europe, nearly 71% of AR patients have both nasal and ophthalmic symptoms. AR outcomes with accompanying ophthalmic outcomes affect patients' HR-QoL in an undesirable way and make their day-to-day performance inferior.[7]

Intranasal corticosteroids (INSs) have been shown to reduce the ophthalmic as well as nasal symptoms in association with AR and AC.[9-11] Likewise, non-sedating antihistamines are effective at controlling ocular complaints of AR patients.[12] Other similar studies indicate that intranasal corticosteroids offer equal or more relief of ophthalmic allergy complaints as compared to intranasal or oral antihistamines.[13] Although, antihistamines usually have their highest effectiveness in the early stage, histamine-mediated symptoms (e.g., itching and rhinorrhoea) and reduced usefulness in treating late-stage symptoms (e.g., congestion).[10] Latest patients' preference research studies have shown that patients' have high expectations of their antiallergic medications, with expectations such as complete symptom relief, quick-onset and long-lasting effects and favourable or no adverse effects.[14,15] On the other hand, patients are often unhappy with the efficiency of their medications which can cause poor patient compliance and addition of over-the-counter products.[15] A research study of patients under expert care stated that patients favoured nasal spray as compared to oral treatment; however, feared adverse events (such as habituation, injury to mucous membranes, dependence and effect on other organs) of INS therapies are still present.[14] Thus, this highlights the necessity of INS treatments to have good all round efficacy, with a reassuring safety profile, to provide a complete treatment for AR that improves the patients' HR-QoL.

AR is a long-lasting illness that is reasonably common around the world and leads to a substantial reduction in HR-QoL. Since epidemiological data, humidity rate, vegetation and allergens differ in countries and even in regions of a country, regional studies are important for analysing the disease with accurate data. The ratio of AR was found to be 11.4% in Aydın in the study of Başak *et al*.,[16] while it was 30% in Eskişehir in the study of Cingi *et al*.[17] This research and other comparable ones in the literature offer evidence for the fact that the values for AR patients and the incidence of the illness may differ depending on the areas.

The frequency of AR is greater in people living in urban centres than in peoples inhabiting in rural regions. In the study piloted by Topal *et al*.,[18] it was described that 66.2% of the patients in the area of Konya lived in the city centre. In our case, only 18% of patients lived in rural areas.

The coexistence of AC is well-recognised in patients with AR.[10,19-25] Although coreporting frequency may be as low as 40%. Underrecognition of AC may be due to patients and physicians paying more attention to allergic comorbidities such as AR or rhinitis or the underappreciation of the variability of eye symptoms in patients with AC.[26-28]

Juniper *et al*.[29] established an association amid daily practical problems and AR problems in their work. Furthermore, in other similar studies in the literature, a mild-moderate correlation was seen amongst the severity of AR symptom and the HR-QoL.[30] Since RQLQ is more of a problem and symptom-based questionnaire, the existence of a correlation with symptom score is a predictable result. In our study, a similar correlation was found with symptom score.

The major limitation of the study is that it did not involve participants from the general population but instead focused on patients who were referred to ENT outpatient clinic.

CONCLUSION

AR can vary based on a region's flora, weather and socioeconomic status. We assessed the sociogeographic features of patients with comorbid AC and their HR-QoL, and we perceived that AR could lead to severe impairment in HR-QoL. The information acquired in our research should be reinforced with more widespread studies. The fact that this chronic disease can impair, the patients' quality of life should be taken into consideration. Patients should be assessed in collaboration with a psychiatry clinic when required. In deduction, although AR patients often come to the ENT clinic, it should be kept in mind that a multidisciplinary approach is desirable for the diagnosis and treatment of the illness.

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Conflicts of interest

There are no conflicts of interest.

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